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ABSTRACT

Reinforcement control of toileting behaviors was established in three profoundly retarded institutionalized adults through the use of a totally automatic reinforcement dispenser. The device was found to be reliable, reasonably priced and more accurate than manually or semiautomatically delivered reinforcement. (CL)

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t Training Profoundly Retarded Adults with an Automatic Device

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Purpose

Since Ellis' (1963) theoretical analysis, the training of toileting behaviors has frequently been approached through various operant procedures (see Azrin & Foxx, 1971). A major difficulty with many of these methods is that the subject may inadvertently be reinforced for the act of retaining feces or urine. When an incontinent subject is placed on a toilet, the researcher generally must wait nearby to reward elimination responses. Even with a semi-automated procedure (cf. Azrin & Foxx, 1971; Hundziak, Maurer, & Watson, 1965), the researcher must remain within earshot of some signal indicating the onset of the toileting act in order to dispense an edible reinforcer with some immediacy. Although social reinforcers in the form of praise may be administered upon completion of toileting, generally the subject's leaving the bathroom marks the completion of a trial and results in the cessation of further attention. As a result of such procedures, through the process of omission training (Kimble, 1961), the subject may actually be punished for elimination while being reinforced for retention; the longer elimination is postponed near the commode, the longer the researcher's social reinforcement is continued. In addition, while awaiting a reinforceable response, the researcher, parent, or attendant is largely hindered from performing other duties. A correlative difficulty is the delay involved in manually delivering food or token reinforcers and, in nonautomated procedures, the unreliability in detecting the criterion response. These problems are especially exacerbated when several subjects are being simultaneously trained (cf. Baumeister & Klosowski, 1965).

The objective was to develop an automatic apparatus which could establish reinforcement control of urination and defecation in three profoundly retarded

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adults. The device was modeled after Azrin & Foxx's (1971) toilet signal apparatus with the addition of an M&M dispenser. Contingent upon appropriate elimination behaviors, reinforcers could be immediately dispensed independently of an attendant's presence.

Method

Three institutionalized, ambulatory, profoundly retarded adults, who displayed little or no appropriate toileting behaviors, were selected from a ward. Training was conducted in a bathroom, separated from the main ward but easily accessible to the subjects (see Giles & Wolf, 1966). A plastic bowl with two semicircular moisture-detecting metal plates lining the bottom was inserted in an adult toilet (see Azrin & Foxx, 1971). Detachable wires connected each plate through relays to a tone generator and an M&M dispenser housed in a box in front of the toilet. Moisture falling in the bowl completed a low-voltage circuit and resulted in the immediate and simultaneous presentation of a tone and one M&M.

Over a 15-hour per day period, subjects' clothing was inspected hourly, and a coded mark was recorded upon each subject's weekly chart (see Foxx & Azrin, 1973) to indicate whether clothes were unsoiled or contained feces and/or urine. Voluntary, unescorted use of the toilet and attendant-initiated toileting were also recorded upon the charts.

After a stable baseline was attained, subjects were escorted to the commode every two hours and were magazine trained to associate the tone of the apparatus with the presentation of the candy reinforcer. Appropriate elimination responses were reinforced with both candy and praise. Next, subjects were prompted to lower their pants and to sit on the toilet, with directive prompts being gradually faded out. On the ward, all subject-initiated (voluntary) approaches toward the toilet were reinforced. Finally, only voluntary trips

to the commode which resulted in appropriate elimination were rewarded. After a stable rate of self-initiated toileting behavior was established, reinforcement was discontinued (extinction) to demonstrate reinforcement control. Finally, the original contingencies were reestablished.

Results

The frequency of accidents (urinations and/or defecations in clothing) was recorded hourly, 15 times per day, as was the frequency of subject-initiated commode usage which resulted in reinforcement (appropriate toileting behavior). Reliability of the coding procedure was 100% for two subjects and 94% for the third. Regarding the reliability of the toilet device, inspection of the plastic bowl after each subject left the bathroom revealed that on no occasion did the apparatus fail to reinforce an appropriate toileting response (as evidenced by the sounding of the tone). On two occasions, a false positive occurred in which an M&M was dispensed with no one in the room. Both times, water from the toilet completed the circuit in the plastic bowl; once the toilet overflowed due to a local flood, and once the plastic bowl accidentally fell below the water line of the toilet.

Over 16 days of baseline, each of the three subjects evidenced a mean of 3.06, 3.12, and 3.75 accidents daily, while exhibiting correct toileting behavior .188, .250, and .250 times daily. Following shaping and fading procedures, the mean daily frequency of accidents over a 24-day maintenance period dropped to .450, .583, and .750 (representing reductions of 86%, 84%, and 80%, respectively), while appropriate toileting increased to 1.17, 1.25, and 1.75 times daily (521%, 400%, and 600% increases). During 12 days of extinction, the daily frequency of accidents increased by 326%, 202%, and 167% over the previous procedure, while self-initiated correct toileting decreased by 57%,

30%, and 62%. Finally, compared to baseline, eight days of reconditioning resulted in daily decreases of accidents of 96%, 88%, and 90% and increases in correct toileting behaviors of 764%, 600%, and 800%.

Conclusions

The results indicate that reinforcement control of toileting behaviors can be established in profoundly retarded adults through the use of a totally automatic reinforcement dispenser. The maintenance of appropriate elimination behaviors and the reduction of daytime incontinence was effected as a result of reward administered by the device. The apparatus avoided the difficulties inherent in manually or semiautomatically delivered reinforcers (delay of reinforcement, omission training resulting in inadvertent punishment for elimination and reinforcement for retention, attendant hampered from performing other duties). The device was more reliable than visual inspection for correct toileting and at least as reliable as semi-automatic techniques (cf. Azrin, Bugle, & O'Brien, 1971). With the addition of the reinforcement dispenser, the device was only slightly more expensive than Azrin's (Azrin, Bugle, & O'Brien), 1971; Azrin & Foxx, 1971) and certainly less costly than Watson's (1968). Although the absolute incidence of all elimination behaviors (both appropriate and inappropriate) might have been expected to increase as a function of the training procedure, thus resulting in a subject eliminating excessively, no such problem was seen; in fact, in all three subjects, the sum of correct and incorrect eliminations per day was higher during baseline than during any other phase of the study.

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